Mária Béres – Éva Kelemen

Archaeological-geological observations in the Saint Roch Church

Mainly in July 2010, archaeological excavation and inspection was carried out during the demolition of certain building parts. Our aim was to support the reconstruction with the results of scientific investigations.[1] Starting from 2009, coordination meetings had been held between the Koszta József museum (Szentes) and Municipal Self-Government of Csongrád that financed the renovation of the church. These meetings had to decide the extent of the archaeological and heritage preservation activity, the extent to which different scientific research methods could be used. Originally, we planned the almost complete excavation of the church's interior and proposed also to make test trenches around the building, to seek answers to the following questions: how big was the church cemetery and how can it be dated; is there any kind of a ditch or fence around it; what is the chronological and spatial relationship between the cemetery and the church? Does the ecclesiastical building in the Saint Roch Square have an architectural antecedent; how did the inhabitants of Belsőváros (Inner Town) use the area in question during the Middle Ages? Can it be confirmed that, according to the tradition living in the minds of local people, the building has mediaeval or Turkish antecedents on the level of the foundation? Finally, the lack of money and time made possible only a minimal preventive research. Following it, construction works proceeded rapidly. The final result was a beautifully restored building. Later, we recorded the data of the archaeological and heritage preservation work in the Koszta József Museum and presented the limited research findings to the citizens of Csongrád.

Given their special character, written sources concerning the sacral and secular buildings of the town in most cases do not tell us much about the mediaeval or Early Modern everyday life in the area concerned. Late mediaeval data are usually found randomly in places such as church archives, the legacies of certain noble families and sporadic documents that have survived in foreign archives, because all of the previously collected documents of Csongrád County perished during the siege of Fülek Castle in 1682. If we do not care for archaeological sites that preserve the contexts of material sources or do not excavate them to the necessary extent, we lose the possibility of scholarly representation of our rich past.

Activities by the Koszta József Museum of Szentes were carried out partly preceding the renovation works of the church, partly parallel with them. We could make only narrow test trenches in the interior of the church and outside, investigating its foundation.[2]

Sondage excavation in the interior of the church. Main stratigraphic units

In the course of the excavation, we investigated the interior of the church with four test trenches in the longitudinal axis, leaving section walls, and the interior space in front of the southern gate with one test trench perpendicular to the axis. The surface in front of the pulpit was examined

with another test trench parallel with the axis of the church. In order to make more accurate observations in the Modern Age strata and to understand better the building periods, we deepened test trench "H"[3] in the nave, cautiously cleaning layer after layer with hand tools. We extended the test trenches significantly in two cases: in order to investigate the brick-lined burials in the chancel, and to examine the stratigraphical situation in front of the southern gate.

If we trace soil layers that came to light in the Saint Roch Church from the bottom to the top, in the interior part of the church we find the yellow subsoil between levels 81.87 and 82.35 MbF[4]. From the apse to the tower, the surface of the subsoil rose, fluctuating between 12–35 cm. Under the chancel, the composition of the subsoil changed: the yellow subsoil became ochre and loessy. Most of the body of the church and the tower was set on this characteristically yellow, undisturbed subsoil.

Above the intact yellow subsoil, there was a 0–150 cm thick black paludal, flooded soil layer, a macroscopically compact black earth[5], that in many cases seemed to be homogeneous, and at the same time seemed hard on the whole territory of the church[6].

In the area of the southern gate some brick debris could be observed in this blackish earth layer, that was certainly strongly rammed. In the earthen walls of test trench "E" and widened section "G", its homogenous character was broken by vertical cracks.

So, it can be assumed that before the final ramming, the black flooded soil layer at the inner side of the former southern gate was disturbed. In the central part of the church and southwest from it, towards the tower, the black earth layer was broken through by several pits, pillars and ditches reaching the subsoil. Hollows and spaces of the observed features were filled with rammed humus-rich earth mixed with sherds and corroded metal fragments.

The levelled earth layer observed between levels 82.71–82.95 MbF was a basically blackish brown muddy soil mixed with humus. In this layer and

above it, there were hard trampled and rammed levels: part of them could have been remains of trodden surfaces coming from different periods in the church, construction work surfaces and cushion packings for cladding. We could observe and trace trampled levels on a small area, so, lacking well datable finds, there is nothing we can say about their extension and exact date of origin. On trodden surfaces there were rare finds of pottery and metal fragments, remains of charcoal. We do not know the concrete place of origin of the latter.

Between 82.50–83.15 MbF a levelled and trampled earth layer formed. It could be observed only in the interior of the church. This layer became brown or brownish-red because of the coffin remains, charcoal and pieces of burned earth surfaces. This mixed earth could have come from around the church, but the exact place cannot be determined. It served as fill before the forming of the trodden surface. Above the brown layer we again recorded very hard, rammed surfaces hardened out of marshy humus-rich soil. However, these trodden surfaces could be identified also at several other spots around the church.

Inside the church, between 82.84–83.49 MbF, we recorded 0–55 cm thick trampled layers and between them remains of plank boarding. The latter can be related to the reconstructions and alterations of the church. Different modern thin layers, levelled filling consisting of black crumby humus or building rubble belong to the recent renovations of the church. These layers frequently appear in the exterior trenches that were dug in order to investigate the foundation. From the exterior, the brick doorstep of the southern gate is connected with the older interior surface coated with paving slabs. At this point we can also connect the interior and exterior levels[7].

The paved level under the Lourdes cave is situated at the same level (83.53–83.63 MbF) as the doorstep stone of the southern gate. This means that until the 20th century, the exterior surface around the church was at least one step lower than the interior surface.

The ground plan and footing of the church

As we have mentioned before, the foundation of the church was made on a yellow subsoil8, the foundation trench everywhere broke through the humus-rich flooded soil whether in situ or whether it was mixed and rammed/trampled.

The foundation wall is relatively small, its lower level ran around one metre deep related to the construction ground level, well under the frost line. Its greatest width was one metre, though at the parts where the yellow subsoil was deeper, it was naturally walled higher, so that the construction of the footing could start from more or less the same level. Its material consisted mainly of demolished, large and small carved or broken limestone blocks[9] and different demolished or burned new bricks. These handmade bricks made up the majority of the ones composing the foundation of the church. It is characteristic, that in the lower row and at the corners, larger and more regular stones, sometimes ashlars were used. Then bricks and masonry mortar provided the alignment and bonding between stones of different size. The wall was interrupted at a distance of around two metres: bricks were not bonded at the end and the beginning of the two-metre-long sections. The same method was used with the footing, but the two-metre block borders of the foundation and of the footing usually did not coincide, so the drift of the building caused less harm in the walls and the roof, and the foundation directed the forces exerted towards the soil relatively flexibly. Stones were certainly reused from earlier demolitions, but most of the bricks also came from earlier building and had been reused, frequently there were fragmentary pieces of unknown origin. The mortar of the foundation was yellowish-grey, hard, of high lime content, following mediaeval masonry traditions, but was not mediaeval. In the foundation trench, the masonry was "floated", but compared to the general practice, durable, hard mortar was less used.

Evaluating the levelling data, we see that at the lower level of the church foundation, there was a 33 cm difference between the northern and southern side, from which 20 cm were adjusted until the upper level of the wall. However, at the upper level of the footing there was only 12 cm difference between the two sides; the builders had to adjust it up to the shoulder of the wall.[10] It is also a special feature that in the northern side of the nave, the footing and wallwork was loaded on the exterior edge of the wall, and on the southern part onto the interior edge.

The foundation of the sacristy runs on 82.49 MbF level. That means that the wall, taking into consideration the exterior construction ground surface, is about 60 cm, not reaching the frost line, its foundation mortar is solid. It seems that similarly to the foundation of the church, the foundation of the sacristy also carried the mass of this building part, transmitting well the burden to the soil. The wall stands on a trampled black marshy subsoil, so it has to be well protected from

water. Macroscopically, the wall of the sacristy and the nave are very similar.

According to the written sources, the tower was finished over a hundred years after the construction of the church. The main features of its foundation are similar to that of the church, but there are much fewer reused stones built in it. At the same time, these stones are similar to the ones observed in the foundation and footing of the church. In the course of the tower's construction, in the foundation trench modern bricks of regular size were bound. In the foundation, hardly any reused bricks were found. Mortar filled only the gaps; it was yellowish, with a high percentage of sand, soft and easily crumbling, not even reaching the solidity of the foundation mortar of the church.

The plaster and painting

Strong roughing-in in the interior of the church, including the tower, was made of a large quantity of solid greyish-white lime mortar containing large balls of lime. In the interior footing of the chancel and nave, at some places cement repairs of up to 60 cm could be observed. Due to renovation works, our observations were limited to small surfaces, so they threw some light on only a part of the interior renovations made from the 19th century.

Painting in the interior of the church in the 19th and 20th centuries was made partly with distemper, partly with size preparation of the surface, then oil paint. In the tower – partly in the nave and in the chancel, in the lower regions of the walls – there could be seen traces of whitewashing after partial scaling. Due the strongly fractionary character of our observations, we did not succeed in dividing the fine paint layers, which was also the consequence of the contemporary surface preparing works before painting. We could not completely interpret the layer order in any of our research sectors. However, judging from the recorded painting layers we can assume the following.

Interior painting of mountings of altars, lower part of the chancel and nave walls was done at different times and in different ways. Before the build-in of the present main altar's mounting, the interior of the church had a polychrome distemper painting. At the region of +120/130 cm, footing and wall were divided with a red band. The former could have been of turquoise blue (chancel), the latter (nave) of grey tone. Windows and doors were emphasised inside with a red framing about five centimetres wide. The upper part of the wall was painted yellow several times in succession. That could have been the time when the outside facade was also given a yellowish tone, and the exterior frame of the southern gate was emphasised with a bright red colour.

After the building of the main altar and placing new pews, a polychrome oil paint was used. The rust-coloured footing painting was raised to 150/155 cm, and the same was used for the footings of the altar. Footing and walls, probably repainted at the same time, were again divided by a red band, and a similar band emphasised the outline of the altars' mountings.[11]

During the renovation of the nave vault in 1947, and after the marble painting of the church, the exterior of the building was given a characteristic Baroque yellow colour. Later in the interior the footing was painted pink, and the exterior changed, where whitewash provided the dominant colour.

Examinations outside the church

In the exterior environment of the church, it was enough to make eight trenches (trenches 5–7 were later widened) and record the phenomena observed. We numbered the stones of the footing, recorded their extension and collected samples from each. We also made panorama and de-

tailed photos and drawings.

Samples of mortar collected from the exterior wall surface of the nave and chancel, macroscopically corresponded to the mortar of the foundation. The way it was built and the bricks, stones and mortar materials were similar. From the exterior side, the chancel's footing is a little different. It is mainly of bricks, and stones were observed here only exceptionally.

Out of 102 stones built into the exterior footing of the nave on the southern side, only three were ashlars: nos. 50, 52 and 98. The most characteristic stones were travertines. On the interior side, in the southern wall, east of the triumphal arch dividing the nave from the chancel, between 90 and 200 cm, a doorway-like surface filled with modern bricks can be seen. We found a corresponding surface also in the exterior wall structure.

In the eastern wall of the chancel, in the exterior side, under the plastering the trace of a window filled with a single row of bricks can be seen. Opposite it, in the interior side of the wallwork, behind the high altar, a 90 cm wide windowcase of Gothic character can be seen. It strongly narrows towards the exterior side and is 50 cm lower and 12–13 cm wider than the rest of the windows.

The inner sides of the window narrowing splayed outwards, were painted a greenish-ochre. Its inner edge was emphasised with a 5-cm-wide red frame, while its splayed parapet with red paint. The narrowing and elongating, that is to say, remodelling of the earlier windows explains why the windowcases and sections of wallwork in the exterior of the chancel do not harmonise.

Burials

Inside the church, several types of burials came to light. In the south-eastern part of the chancel, from the axis towards the sacristy, a brick-lined burial covered with beams and planks was found. Its original size was 110x240 cm. It was dug out in the following way: a 110x240 cm large rectangular pit – the longitudinal wall of which corresponded to the axis of the church – was marked out, then a pit about 140 cm deep was dug. Along the vertical sidewalls, moving upwards from the bottom, the pit was lined with a row of 15x6x29–30 cm large bricks bounded with strongly sandy mortar.[12] Here, the body was placed in a wooden, strongly built coffin of trapezoid cross-section. The coffin was hammered with copper-headed nails. The pit was covered with beams set into nests formed in the brick wall. The level of the beams corresponded to that of the chancel's floor. They were then covered with planks. Later, the size of the burial was doubled: beside the north-western wall (pointing towards the sacristy) of the existing pit a new one was dug. The latter was 110x240 cm large. The western wall of the original brick-lined grave was demolished. Then the newly formed part of the pit was lined with large reused bricks laid lengthwise.[13] With the extension, the size of the brick-lined grave became 220x240 cm. Earth was thrown onto the coffin

in the original pit and later in the younger pit part. In time, this earth subsided and the layer became 60–80 cm thick. The doubled pit was covered parallel with its shorter side with 20x20 cm large beams of rectangular cross-section, and with planks placed perpendicularly. Finally, the wooden structure rotted and fell into the grave-pit, so it was completely filled with earth. Following that, the soil was tamped and then the chancel was given its modern floor paving.

A similar burial structure came to light in the north-western quarter of the nave, in front of the one built in the chancel. Here the "burial chamber" was lined not with bricks, but with planks. Child and adult coffins crowded and partly placed onto each other here (graves 14–18) were also hammered with copper-headed nails. All the coffins were aligned with the axis of the church.

Beside the burials mentioned, we found three further graves, situated according to the axis of the church (N-S: 50°) in a row. Judging from the soil layers broken through by grave-pits, all of them can be dated to the 19th or 20th centuries (graves 7, 11).

Outside the church, we also found spots of graves aligned with the axis of the church, dug in a row, and a coffin burial, dug into the foundation of the north-eastern wall of the chancel. It was closed in the foundation similarly to the way in which the body of Christ taken down from the cross was placed in the cave (entrance closed with rocks). Intruding ground water prevented us from excavating the feature.

Settlement – cemetery – church

Small fragments of glazed and unglazed, red and white clay vessels came to light from the fill of the pit in the centre of the church. Of special interest is a wheel-made, yellowish-brown and green lead-glazed bowl fragment. This deep vessel with flat bottom and wide vertical rim, made of white clay was decorated with variation of yellowish-brown and green glaze colours separated with incisions.

This bowl is similar to a special type of vessels decorated with etched motifs and glaze.[14] Similar fragments of bowls and jugs are known from the excavation of the old church and the northern block of the house in Bocskai Street, Hódmezővásárhely.[15] On the basis of the latter, material of the pit found under the floor of the church can be tentatively dated to the second half or end of the 17th century.

Finds collected in sector "H" excavated from layer to layer, coming from the trodden surfaces and levelling between these surfaces, can be dated to between the 16th century and the early 18th century. The area under the church was used as settlement territory in the Early Modern Age until the beginning of the 18th century.

Archaeological sondage made in the interior of the church showed that on the territory bordered by the walls of the building, we cannot count with another significant building made of solid materials or a demolished one.

There were no traces of connections between the remains of the former settlement and the graves on our excavation territory, so the relationship between the settlement and the cemetery cannot be determined on the basis of the excavation results. Graves found in the church, aligned with its axis and situated in a row, broke through 18th and probably 19th century levels, so even at this time burials took place here.

We have little evidence for the dating of the burial structures outstanding by their size and location (church crypts, "burial chambers"). Copper-headed nails decorating coffins or copper textile decorations on the edges of shrouds and wrought-iron nails do not provide dating value; they were widely used in the 17th–19th century. Burial structures were aligned with the axis of the church, so they can probably be dated to the 18th–19th century. Burials placed one on another in the burial chamber of the nave, attest to their long use over several generations. At the same time, we are not able to connect the burials to concrete members of the community. Brick-lined graves built in the chancel could have been in a special position: they were situated in the apse, the crypt was brick-lined and extended after a time. A further evidence is that there were no burials placed on top of each other here, they were made individually.[16]

Sepulture made in the exterior of the chancel, in the foundation of the north-eastern wall, can certainly be dated to after the construction of the church. The situation of the burial in itself is special, because at the end of the funeral ceremony "the grave was blocked" with stones carved out of the foundation during the construction of the vault. In this way, a liturgical message was composed: the deceased could have occupied his final resting place like Christ in the rock tomb. We were not able to investigate this burial because of the intruding ground water, so it can be connected only conditionally to a certain person or period.

From the canonical visitations of the year 1754 we learn that Catholics of Csongrád had two cemeteries, and one of them was the one situated around the Saint Roch church.[17]

"... there should be new cemeteries in a suitable place outside the settlement ..."

In the 17th–18th centuries, church graveyards reached their capacity, and the burials made on top of each other and disturbance of graves represented a serious danger of infection for the population. To end the problems of burial, in a document dated 10th July 1775, the Royal Chancellery called on the Royal Council of Governor to draw up a national edict. After two years of preliminary work, the Council issued the edict on 2nd September 1777. It prohibited burial of the deceased in churches and churchyards. Instead, new cemeteries were to be established on the outskirts of the settle-

ments. Ecclesiastic and local edicts were issued for implementation of the central edict. For example, in 1780, the leadership of Pest-Pilis-Solt County issued a circular prohibiting further burials in church graveyards in the Danube–Tisza Interfluve. At the same time, church leaders were called on to designate the place of new cemeteries.[18] The removal of cemeteries proceeded more rapidly in towns than in small settlements because of the constant population growth and lack of space in church graveyards. In the settlements of the Great Hungarian Plain that were more accessible and thus more easily controlled, instructions of the central edict were also implemented sooner than in remote villages. By the first half of the 19th century, most cemeteries were located outside the settlements.

It must have been in connection with the Council of Governor's 1777 edict that the funeral chapel erected in honour of Saint Roch, Saint Sebastian and Saint Rosalia was demolished in 1784 and in the same year, after the renovation, religious activity became more lively in the Belsőváros Church. It seems probable that after 1784 there were no longer large numbers of burials in the present Saint Roch Church and its surroundings, although we find exceptions in the case of most churches.[19]

Construction of the Saint Roch Church

Observing retrospectively the data of physical identification and written sources on the church, we can say that the conditions of its construction and major renovations are not entirely clear. Our small scale archaeological excavation was not able to solve these problems.

The orientation of the church deviates about 30° from the east toward north. This direction is not unusual, but is not common either. In mediaeval church building practice, the chancel was oriented almost exactly to the east. A deviation came usually if the builders were constrained by some physical circumstance (an earlier foundation/wall to be re-used or an existing road, building, property border etc). In determining the orientation, also the patron saint or marking out the eastern direction purely by experience (observation of the Sun) could have played role. From the 18th century, there was less and less insistence on the east-west axis of churches.

The chancel of the church terminating in five sides of an octagon connects to the rectangular nave with a – now plain arched – triumphal arch. The ground plan is essentially of mediaeval taste, but right from the construction of the foundation the external piers and internal pillars, half-columns were not connected with the building. This indicates that the church already originally had a flat ceiling. There is a little asymmetry in the foundation and walls of the chancel between the northern and southern side, but this can be explained by measuring and alignment inaccuracy and by the use of different-sized bricks. The mortar of high lime content and solidity used during the construction of the church is also similar to the mediaeval materials, but is not mediaeval.

Sizing of the church, alignment of foundations, digging of the foundation trench and the foundation itself all point rather to good and experienced builders than to careful architects: the foundation level strongly deviated between the northern and southern side. It was so serious that they could adjust it only during the construction of the top of the wall and the shoulder.

Foundation, footing and wallwork – as far as we could observe from the plaster coming off – differ in technology. Reused building material could be seen in the foundation and footing. We do not know their precise origin, but it seems that builders could use beside stones and bricks tempered with chaff from the Árpádian Age, perhaps reused materials from the Middle Ages and Early Modern Age.[20] The building team probably involved a lot of workers, and it seems that the mixed material was used in parallel by two groups: one at the northern, another one at the

southern side. This could explain the level difference exceeding 30 cm between the two sides at the upper level of the foundation. However, the wallwork of the church is of good quality. It was built of large hand-made bricks. Above the footing, the masonry work was done very carefully.

Archaeological observations on the construction of the church seem to justify the information by János Széplaky, who was the bailiff of Sándor Károlyi's estate in the area of Csongrád and Hódmezővásárhely.[21] Archaeological data at our disposal do not support the suggestion that there used to be an earlier mediaeval church or a building constructed by the Turks directly on the site of the Saint Roch Church.[22]

Geological examination of the most important building stones found in the church

The geological-petrographical examination dealt with the stones found during the archaeological investigation of the 18th century Saint Roch Church, coming mostly from secondary position.[23] After the review of earlier examination results and the literature, we can conclude that stone used in the same period at other settlements was involved in the construction of the church. All the stone very probably came from Hungarian sites.

Examining the 364 pieces of stone material, we could distinguish only three types of rocks:

dolomitic limestone, coarse ooid limestone and travertine. We could conduct only macroscopic examination of rock samples made with a magnifying glass.

Out of the total material, we determined 288 pieces as *dolomitic limestones*. This rock was formed geologically and subsequently used in practically the same region, which is determined by the circumstances under which the formation of rocks took place.[24] This rock appears extensively in the sand hills of the Danube–Tisza Interfluve, on the Great Hungarian Plain, making it the unique and special building stone of the region. Rock samples were hard, but frequently porous, sometimes of strongly cancellous and close grained structure. They were grey, light grey, but yellowish-brown and yellowish-grey secondary limonite colour was also frequent.[25] In many samples we see fossils, fragments of snails and shells or their cavities.[26]

Dolomitic limestone forms thin tables about one meter deep under the topsoil, so, lacking any other rocks, it was used in the early constructions. According to some hypotheses it was quarried already from the Avar period, and we have evidence for its use in the Árpádian Age.[27] Quarries were situated within a few kilometres of the former settlements. Early geographic names refer to their sites (for example, Kővágó ['Stone cutter']; Kőtörés ['Stone breaking'] etc).[28]

Well workable ashlars carved on the spot were used already from the 11th century in the foundation of the early settlements' buildings or in the wallwork. Rocks could be transported from the Danube–Tisza Interfluve by waterway or on wagons. Such rocks have been found among the samples of building materials, among others, at the following sites: Bokros-Kiskőhalom (Csongrád)[29]; Csengele; built into the foundation of

the Saint George and Saint Elisabeth Church in Szeged[30]; Szermonostor (monastery) and parish church[31]; Ellésmonostor[32]; Csomorkány[33], Fábiánsebestyén, Saint Elisabeth Church (Szeged) and Szentes-Kaján[34].

Among the building stones of the Saint Roch Church of Csongrád, 65 pieces belong to the group of *coarse ooid limestones*[35]. Coarse limestone is well workable and easy to cut, so it has been a popular building and decorative stone starting from Antiquity. This yellowish-white, porous rock formed in the Miocene, is of sea origin. Many types are known, among which the most widespread is the ooid limestone. The most classical site of the rock is the Sóskút quarry twenty kilometres west of Budapest. Material from the Buda quarries served as a favourite decorative and building material all around Hungary starting from the Middle Ages[36], and we find it also in later architectural monuments in Budapest.[37]

Material of the examined samples corresponds to the results of analyses based on the stone samples from many other archaeological sites in the south of the Great Hungarian Plain. Among them we can mention, for example, Ellésmonostor[38], Alsóváros (Lower Town) Church (Szeged)[39], Szermonostor[40], Szentbenedek, Megyer, Sarkadkeresztúr, Ópusztaszer, Szegvár-Sáp, Bokros-Kiskőhalom (Csongrád), Szentes-Kaján, Fábiánsebestyén, Saint Elisabeth Church (Szeged) and Gerlamonostor.[41]

From the rocks of *travertine* type, we identified 11 pieces in the wall of the Saint Roch Church.

The largest site of travertine is situated in the north-eastern part of Transdanubia (the territory west of the Danube)[42], where the rock was formed in connection with warm springs emerging along the fault and smaller basins and lakes forming around them.[43] The colour of the Upper Pliocene and Pleistocene rock samples ranges from greyish-white to light yellow. The structure of the rock is dense, well workable: it can be easily cut and polished. Macroscopically we could observe characteristic striped, sometimes radiate structure indicating the formation circumstances of the rock and maximum 1–1.5 mm large pores, the remains of former perished plants.

The use of travertine was significant already in the Roman Age because of its colour and great solidity. In addition, it was suitable for carving. It appears at a number of places as it was a very popular material. Beside deposits in Budapest and vicinity, several small, but by now worked out or built-in travertine quarries used to operate, for example in Dunaalmás and Süttő. After the Middle Ages, the heyday of the use of Hungarian travertine was in the 18th–19th centuries. The next upswing came during the reconstruction works following the Second World War, when beside the ooid coarse limestone, travertine was also considered to be a special decorative material.[44]

As a result of comparison with earlier examination results, samples identified in the walls of the Saint Roch Church of Csongrád could have come from Transdanubia either on the Danube, or on one of the most important overland trade routes (Buda–Szer–Szeged). This rock was used also in the construction of Ellésmonostor[45], Székkutas[46], Alsóváros (Lower Town) Church (Szeged)[47], Szermonostor[48], Bokros–Kiskőhalom (Csongrád) and Szentes–Kaján[49].

Geological examination of 364 stone samples found during the archaeological investigation of the Saint Roch Church in Csongrád shows similarity with the results of some earlier archaeological excavations in the southern part of the Great Hungarian Plain. Quarries of the above described limestones can be put, principally, in Transdanubia and it is very probable that building materials (travertine, coarse limestone), for reasons of economy, were transported to the construction site together, on water or overland route. Dolomitic limestone could have been transported from the region of Szer or from the Danube–Tisza Interfluve. No microscopic examinations and accurate and detailed fossil identifications were made: in the future such examinations can provide further important information.

Endnotes

1 Actual scientific examinations on the spot were carried out between 1st and 19th July 2010, after that, during the construction works, the museum had only the opportunity to make observations, the research could not be continued. "Records of test and preventive excavations, wall survey of Roman Catholic church in Csongrád, Site 230 (KÖH id.no. 17574), Szent Rókus tér (Saint Roch Square)." Excavation leader: Dr. Mária Béres. Archaeological Archives of Koszta József Museum, inv.no. 1071-2015 and 1072-2015.

2 Test trenches and their extensions covered 14 percent of the complete territory of the church, which was not enough for the convincing clarification of the construction history taking into consideration the complicated stratigraphical situation experienced during the digs.

3 Test trenches deepened in the longitudinal axis: I="A-B"; II="C"; III="D"; VIII="I", a total of four trenches. In the interior territory in front of the southern gate IV=test trench "E" and V.="G" widening was made. On the surface in front of the pulpit test trench V="F" was situated. Test trench perpendicular to trench "C" was VII="H", this one was dug carefully by hand layer after layer.

4 Measurements of metres above sea level (MASL) are usually based on a mean sea level recorded in an agreement. In Hungary the constant reference points are the ones in Nadap (County Fejér). Around 1960, it was decreed that East European socialist countries had to change from the Adriatic mean level to the Baltic mean level that is 67.47 cm higher, than the earlier used Adriatic mean level. In surface survey, the values of heights and depths related to the level of the Baltic Sea are still common.

5 Béres 2000. 202.

6 Black dense flood soil was observed between 82.23 and 83.41 MbF inside the church. Under the cavities reaching down to yellow subsoil (e.g. foundation of the church) it was 0 cm deep, at other places it survived depending on the depth of the features dug in. This black flood layer formed on the spot in a natural way. This type of soil is suitable for construction, or, more precisely, for foundation only if it is strongly compressed, rammed, and this can be solved only if the humus above it is temporarily removed. Before the construction of the church, at those places where the original soil was scarified (for example, a pit or a grave was dug into it) – disturbed, as we call it in archaeological literature – the loose fill of the disturbed area could have been rammed together with the black flood soil.

7 Inside the Saint Roch Church, the level laid with older paving slabs runs at 83.27–29 MbF.

8 The lower level of the foundation ran at the level of 81,87–82,22 MbF.

9 Examination of the rock material and review of results was made by Éva Kelemen.

10 Measuring at the northern and southern side, the depth values of the lower level of the foundation trench range between 82.97–83.30 MbF; level data measured on the upper level of the footing are between 84.25–84.37 MbF.

11 *Csongrádi Közlöny,* 31 May 1896, Vol. III. No, 22. p. 3. I thank Orsolya Gyöngyössy for the information.

12 In the wallwork the bricks were placed regularly, interspaces of one brick row were covered by bricks of the next row.

13 This was a half-brick-wide wallwork made of bricks laid in the direction of the wall's length on their plain sides. Vertical interspaces formed between bricks slid over each other at a half-brick width.

14 This vessel type originated during the Renaissance. In the leather-hard material of wheel-made plates, jugs and pitchers lines running around the vessels or geometric decorative patterns and surfaces were etched with a sharp tool. Vessels were glazed with two colours, typically with different tones of yellow and green. Sometimes stamped patterns or raised ribs were used. They are usually dated to the 15th–16th centuries; 17th–18th century assemblages only rarely include such pottery. According to our present knowledge, the piece from the Saint Roch Church is not older than the second half of the 17th century.

15 Lajkó 2015. 71; 119.

16 One of them could be that of the Csongrád archdeacon and parish priest Márton Berinkei (1703–1762). Nagy 2008. 8.

17 Nagy 2008. 6.

18 Gecséné 2012. 24–25.

19 Béres 1995. 39. In cases where a community was the founder and builder of a church, the right of burial in the church crypt was due to practically anybody who was able to pay the costs.

20 The types of bricks are the following. Chancel: 12x3.5x... (unplumbed) cm; hand-made, well fired, tempered with ground clay, claret-coloured or orange, suitable for carving, mediaeval, in the Saint Roch Church were found both in the foundation and footing in small number. 15x5x... cm; hand-made, well fired, slightly tempered with chaff, claret-coloured or orange, suitable for carving, mediaeval, in the Saint Roch Church were found both in the foundation and footing in small number. 24.5x6x... cm; hand-made, well fired, claret-coloured or orange, suitable for carving, in Saint Roch Church used in the foundation and footing, mostly built in. 15–17x7–8x... cm; hand-made, well fired, claret-coloured or orange, suitable for carving, in the Saint Roch Church was used in the footing, mostly built in. Nave: 15x5x... cm; hand-made, well fired, slightly tempered with chaff, claret-coloured or orange, suitable for carving, mediaeval, in the Saint Roch Church was used in low number both in the foundation and footing.

15–17x7–8x... cm; hand-made, well fired, claret-coloured or orange, suitable for carving, in the Saint Roch Church was used in the foundation and footing, mostly built in. Sacristy: 31x6.5–7.5x... cm; hand-made, well fired, claret-coloured or orange, suitable for carving, in the Saint Roch Church was used both in the foundation and footing, mostly built in. 15x8–8.5x... cm; hand-made, well fired, claret-coloured or orange, suitable for carving, in the Saint Roch Church was used both in the foundation and footing, mostly built in. Tower: 32x16x6 cm; extruded, well fired, standard-size brick, no irregularities characteristic of hand-made products. There are pieces with traces of iron and cold-resistant ones, pieces containing larger amounts of sand; in the Saint Roch Church were used both in the foundation and footing, mostly built in. Chancel, brick-grave: 29–30x15x6 cm; hand-made, well fired, claret-coloured or orange, suitable for carving, one with "C" stamp, mostly built in.

[21] MNL OL, P 398, 70874. Information by Júlia Bara and Orsolya Gyöngyössy.

[22] Excavation was led by Dr. Mária Béres, further participants: archaeologist Krisztina Szabó, field technician Ferenc Orosz, translator of historical data Géza Balázs Nagy. Inventory of finds and records was made by archaeologist Éva Szabó.

[23] Stones once used for other buildings and after demolition reused in the construction of the Saint Roch Church.

[24] In the hollows of the shifting sand dunes of the Danube–Tisza Interfluve, due to the strong evaporation caused by the summer droughts and the ability of vegetation and, to a smaller degree, of snails and mussels to abstract carbon dioxide, strongly alkaline water with high concentration of salt formed. Autumn precipitation suddenly adds a large amount of freshwater to this lake water, reducing the salt content and raising the ratio of magnesium and calcium. As a result, lime containing magnesium or dolomite mud separates from the water, transforming into dolomite. Magnesium comes from the loess of the territory. Carbonate mud and hardrock have been forming from around 8000 years ago. On the basis of the fauna found in it, it can be assumed that the oldest deposits formed during the dry and cold (oak period), then in the following humid and warm climate (hazelnut period). Mucsi 1973; Molnár 1980; Molnár–Szónoky–Kovács 1981; Szónoky 2001; 2002.

[25] Limonite is a term marking the mixture of iron oxides and iron hydroxides belonging to the oxide minerals.

[26] As a result of earlier microscopic examinations, it can be assumed that the carbonate content of the rock can change between 45–75%. Close-grained carbonate forming the structure of the rock can contain 20–60% of lithoclasts. Bioclasts are made from fragments of mollusc shells (for example, snails and mussels) of different amount. For example, on sample 88 a Stagnicola sp snail shell can be seen, in samples 67 and 70 Planorbis snail remains could be observed. Kind communication by Miklós Szónoky, 2012.

[27] Szarka (manuscript) 2008.

[28] The mining of the rock ceased in the 1970s. To date, it is under protection, a type quarry can be seen in the vicinity of Csólyospálos, on the territory of the Kiskunság National Park. Juhász 1982; Sztrinkó 1982; Szarka (manuscript) 2008.

[29] Béres 1985. 109.

[30] Pávai 2000; Trogmayer–Zombori 1980; Trogmayer 1998; Béres 2000; Horváth 2001.

[31] Szónoky (manuscript) 2002; 2005.

[32] Iványosi–Szabó (manuscript) 1994; 1998.

[33] Kelemen (manuscript) 1999; 2008.

[34] Kelemen (manuscript) 2010.

[35] Ooid limestone formed in the Sarmatian Stage of the Miocene and belongs to the so-called Tinnye Limestone Formation. The size of the well or moderately rounded ooids macroscopically is 0.2–2 mm. As a result of other microscopic examinations it can be stated that the structure of such rocks is made up of carbonite matrix and the main minerals are calcite, and to a lesser degree, quartz and feldspar. Calcite can appear as the nucleus of the ooids. Török 2008.

[36] As an example, see: Zsámbék, Simontornya Castle, Pusztaszer, Esztergom Palace, Visegrád Palace.

[37] As an example, see: Citadel, Opera House, Matthias Church.

[38] Iványosi-Szabó (manuscript) 1994.

[39] Vizi 1990; Szónoky 2001 (manuscript); 2002; Lukács–Szónoky–Hadnagy 1993.

[40] Szónoky (manuscript) 2005.

[41] Kelemen (manuscript) 2010.

[42] Travertine formed in the Pleistocene and belongs to the so-called Dunaalmás Limestone Formation.

[43] On the basis of the microscopic examinations of analogous samples, it can be stated that this rock type consists entirely of microcrystalline carbonate (calcite). The remaining cavities of perished plant parts are filled with crystalline calcite. The relatively high degree of crystallinity and moderate porosity indicate the warm water origin. The size of the crystals is about 0.1–0.5 mm. Török 2005.

[44] Kertész 1985.

[45] Iványosi-Szabó (manuscript) 1994.

[46] Rózsa (manuscript) 1993.

[47] Vizi 1990; Szónoky 2001.

[48] Szónoky (manuscript) 2005.

[49] Kelemen (manuscript) 2010.